REMARKS/ARGUMENTS

1. Amendments to the Claims

Claims 1, 4, and 7 have been amended to more clearly define that the first signal and the second signal are both modified to thereby make a phase difference between the modified second signal and the first signal become substantially close to 90 degrees, which is fully supported by applicant's specification. Claim 15 has been cancelled without prejudice. The term "phase calibration module" in claims 7, 9, 10, 12, and 14 has been replaced with "calibration module" without introducing any new matter; in addition, the term "programmable phase calibration device" in claims 4 and 5 has been replaced with "calibration module" without introducing any new matter.

As no new matter is introduced, consideration of above-identified claim amendments is respectfully requested.

2. Claim Rejections – 35 USC 103

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rahman (US Publication 2003/0174641 A1).

Response:

Claim 1

Claim 1 has been amended to specify that the first signal and the second signal are both **modified** to achieve orthogonality between the first signal and the second signal, where the modification made to the first signal, i.e., a portion of the first signal subtracted from the first signal, is used for modifying the second signal. The applicant asserts that above-identified feature is neither taught nor suggested by Rahman's teaching.

Referring to Rahman Fig. 5 and specification paragraphs [0033]-[0034], the I/Q phase imbalance detection and correction circuit (98) includes an I/Q phase imbalance correction loop (132) and a feed forward signal path (134), where the I/Q phase imbalance correction loop (132) acquires the I/Q phase imbalance over a slot period, and the obtained I/Q phase

imbalance is applied to the feed forward signal path (134) at an end of the slot period. With regard to the I/Q phase imbalance correction loop (132), Rahman teaches multiplying the accumulated phase error with the unequalized I-signal to derive a multiplier result $Cos(A)Sin(e)$, and then subtracting the multiplier result from the unequlized Q-signal to

5   yield a subtractor result $Sin(A+e)-Cos(A)Sin(e)$. As one can see, **only one of the I-signal and the Q-signal is modified**; that is to say, the Q-signal is modified due to a portion of the I-signal, but **the I-signal remains intact**. Similar to the I/Q phase imbalance correction loop (132), Rahman's feed forward signal path (134) multiplies the accumulated phase error, which is derived from the I/Q phase imbalance correction loop (132) and stored in the register,

10   with the unequalized I-signal to yield a multiplier result and then subtracting the multiplier result from the unequlized Q-signal for correcting the phase imbalance. Therefore, the I-signal in the feed forward signal path (134) remains intact. In other words, the I-signal input of the feed forward signal path (134) is identical to the I-signal output of the feed forward signal path (134).

15   Briefly summarized, the I/Q phase imbalance detection and correction circuit taught by Rahman does not apply any modification to the I-signal. As Rahman fails to teach or suggest modifying both of the I-signal and the Q-signal to achieve orthogonality between the I-signal and the Q-signal, the applicant therefore asserts that the claimed limitations "modifying the first signal by subtracting a portion of the first signal from the first signal" and "modifying the

20   second signal by the portion of the first signal so that a phase difference between the modified second signal and the first signal becomes substantially close to 90 degrees" are neither taught nor suggested by Rahman. (*emphasis added*) Withdrawal of the rejection is respectfully requested.

25   Claim 2
           Claim 2 is dependent upon claim 1, and should be allowed if claim 1 is found allowable.

       Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wynn (US Patent

6,009,317), in view of Rahman (US Publication 2003/0174641 A1), and further in view of

Jeong (US Publication 2003/0095589 A1).

Response:

Claim 4

5   In view of above arguments of claim 1, the applicant asserts that the claimed limitation

"utilizing the calibration module to reduce the phase mismatch in the pair of quadrature

signals through <u>modifying the first signal</u> by subtracting <u>a portion of the first signal</u> from the

first signal, and <u>modifying the second signal by the portion of the first signal</u>" is neither

taught nor suggested by the combined teaching of the cited references. (*emphasis added*)

10   Withdrawal of the rejection is respectfully requested.

Claim 5

       Claim 5 is dependent upon claim 4, and should be allowed if claim 4 is found allowable.

15   Claims 7, 9-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wynn

(US Patent 6,009,317), and in view of Rahman (US Publication 2003/0174641 A1).

Response:

Claim 7

       In view of above arguments of claim 1, the applicant asserts that the claimed limitation

20   "a calibration module coupled to at least one of the first mixer and the second mixer, for

<u>modifying the first signal</u> by subtracting <u>a portion of the first signal</u> from the first signal, and

<u>combining the portion of the first signal with the second signal</u> so as to make the phase

difference of the first signal and the second signal substantially equal to 90 degrees" is neither

taught nor suggested by the combined teaching of the cited references. (*emphasis added*)

25   Withdrawal of the rejection is respectfully requested.

Claims 9-10 and 13

       Claims 9-10 and 13 are dependent upon claim 7, and should be allowed if claim 7 is

found allowable.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wynn (US Patent 6,009,317) and Rahman (US Publication 2003/0174641 A1), as applied to claim 7, and further in view of Zheng (US Publication 2004/0002323 A1).

5 **Response:**

Claim 14 is dependent upon claim 7, and should be allowed if claim 7 is found allowable.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wynn (US Patent 10 6,009,317) and in view of Zheng (US Publication 2004/0002323 A1).

Response:

Claim 15 has been cancelled.

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (US 15 Publication 2004/0002323 A1), and in view of Rahman (US Publication 2003/0174641 A1).

Response:

In view of above arguments, the applicant asserts that claim 4 should be found patentable over the combined teaching of the cited references. In addition, claim 5 is dependent upon claim 4, and should be allowed if claim 4 is found allowable.

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3. Claim Rejections – 35 USC 102

Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Zheng (US Publication 2004/0002323 A1).
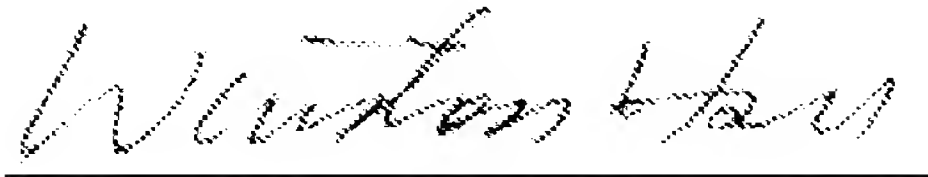
Response:

25 Claim 15 has been cancelled.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,

Date: _____03/21/2008_____

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is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)